CLAIMS

What is claimed is:

1. A heat sink attachment mechanism comprising:

a fastener having a head portion and a shaft portion, the head portion configured to generate a stress on a heat sink to secure the heat sink with a circuit board component and the shaft portion having a flange substantially perpendicular to a long axis defined by the shaft portion, the flange configured to abut a surface of a circuit board carrying the circuit board component when the fastener secures the heat sink to the circuit board component; and

a compressible member in communication with the shaft portion of the fastener and configured to orient between the head portion and the heat sink, the compressible member having a diameter configured to expand when the head portion compresses the compressible member and generates the stress on the heat sink when the fastener secures the heat sink to the circuit board component.

2. The heat sink attachment mechanism of claim 1 wherein the shaft portion comprises a first shaft potion having a first diameter and a second shaft portion having a second diameter less than the first diameter of the first shaft portion, an interface between the first shaft potion and the second shaft defining the flange, the second shaft portion configured to couple with a side portion of a support member associated with the circuit board when the fastener secures the heat sink to the circuit board component.

3. The heat sink attachment mechanism of claim 2 wherein the first shaft potion of the fastener defines a length relative to a height of a circuit board assembly such that the length of the first shaft portion limits deformation of a solder joint between the circuit board component and the circuit board.

4. The heat sink attachment mechanism of claim 1 further comprising a trough portion defined by the shaft portion of the fastener, the trough portion extending along the shaft portion about, and substantially perpendicular to, the long axis of the shaft portion, the trough portion configured to secure the compressible member to the fastener.

5. The heat sink attachment mechanism of claim 1 wherein the diameter of the compressible member is greater than a diameter of the head portion of the fastener.

6. The heat sink attachment mechanism of claim 1 wherein the compressible member comprises a compliant elastomeric material.

7. The heat sink attachment mechanism of claim 1 wherein the compressible member comprises an electrically conductive material.

8. A heat sink apparatus for cooling a circuit board component mounted to a circuit board, the heat sink apparatus comprising:

a heat sink; and

heat sink attachment mechanism comprising:

a fastener having a head portion and a shaft portion, the head portion configured to generate a stress on the heat sink to secure the heat sink with a circuit board component and the shaft portion having a flange substantially perpendicular to a long axis defined by the shaft portion, the flange configured to abut a surface of a circuit board carrying the circuit board component when the fastener secures the heat sink to the circuit board component; and

a compressible member in communication with the shaft portion of the fastener and configured to orient between the head portion and the heat sink, the compressible member having a diameter configured to expand when the head

portion compresses the compressible member and generates the stress on the heat sink when the fastener secures the heat sink to the circuit board component.

9. The heat sink apparatus of claim 8 wherein the shaft portion comprises a first shaft potion having a first diameter and a second shaft portion having a second diameter less than the first diameter of the first shaft portion, an interface between the first shaft potion and the second shaft defining the flange, the second shaft portion configured to couple with a side portion of a support member associated with the circuit board when the fastener secures the heat sink to the circuit board component.

10. The heat sink apparatus of claim 9 wherein the first shaft potion of the fastener defines a length relative to a height of a circuit board assembly such the length of the first shaft portion limits deformation of a solder joint between the circuit board component and the circuit board.

11. The heat sink apparatus of claim 8 further comprising a trough portion defined by the shaft portion of the fastener, the trough portion extending along the shaft portion about, and substantially perpendicular to, the long axis of the shaft portion, the trough portion configured to secure the compressible member to the fastener.

12. The heat sink apparatus of claim 8 wherein the diameter of the compressible member is greater than a diameter of the head portion of the fastener.

13. The heat sink apparatus of claim 8 wherein the compressible member comprises a compliant elastomeric material.

14. The heat sink apparatus of claim 8 wherein the compressible member comprises an electrically conductive material.

15. A circuit board assembly comprising:

a circuit board and a circuit board component mounted to the circuit board;

a heat sink apparatus for cooling the circuit board component, the heat sink apparatus including:

heat sink; and

heat sink attachment mechanism comprising:

a fastener having a head portion and a shaft portion, the head portion configured to generate a stress on the heat sink to secure the heat sink with the circuit board component and the shaft portion having a flange substantially perpendicular to a long axis defined by the shaft portion, the flange configured to abut a surface of the circuit board carrying the circuit board component when the fastener secures the heat sink to the circuit board component; and

a compressible member in communication with the shaft portion of the fastener and configured to orient between the head portion and the heat sink, the compressible member having a diameter configured to expand when the head portion compresses the compressible member and generates the stress on the heat sink when the fastener secures the heat sink to the circuit board component.

16. The circuit board assembly of claim 15 wherein the shaft portion comprises a first shaft potion having a first diameter and a second shaft portion having a second diameter less than the first diameter of the first shaft portion, an interface between the first shaft potion and the second shaft defining the flange, the second shaft portion configured to couple with a side portion of a support member associated with the circuit board when the fastener secures the heat sink to the circuit board component.

17. The circuit board assembly of claim 16 wherein the first shaft potion of the fastener defines a length relative to a height of a circuit board assembly such that the length of the first shaft portion limits deformation of a solder joint between the circuit board component and the circuit board.

18. The circuit board assembly of claim 15 further comprising a trough portion defined by the shaft portion of the fastener, the trough portion extending along the shaft portion about, and substantially perpendicular to, the long axis of the shaft portion, the trough portion configured to secure the compressible member to the fastener.

19. The circuit board assembly of claim 15 wherein the diameter of the compressible member is greater than a diameter of the head portion of the fastener.

20. The circuit board assembly of claim 15 wherein the compressible member comprises a compliant elastomeric material.

21. The circuit board assembly of claim 15 wherein the compressible member comprises an electrically conductive material.

22. A heat sink attachment mechanism comprising:

a fastening means having a head means and a shaft means, the head means to generate a stress on a heat sink to secure the heat sink with a circuit board component and the shaft means defining a long axis and having a flange substantially perpendicular to the long axis, the flange configured to abut a surface of a circuit board carrying the circuit board component when the fastening means secures the heat sink to the circuit board component; and

a compressible means in communication with the shaft means of the fastening

means and configured to orient between the head means and the heat sink, the compressible means having a diameter configured for expanding when the head means compresses the compressible means and generates the stress on the heat when the fastening means secures the heat sink to the circuit board component.

23. A method for assembling a circuit board assembly comprising:

placing a heat sink in communication with a circuit board component, the circuit board component coupled to a circuit board;

securing the heat sink to the circuit board component using a heat sink attachment mechanism, the heat sink attachment mechanism having a fastener having a head portion and a shaft portion, the shaft portion defining a long axis and having a flange substantially perpendicular to the long axis of the shaft portion and the heat sink attachment mechanism having a compressible member in communication with the shaft portion, the head portion, and the heat sink;

causing the flange of the shaft portion to abut a surface of the circuit board; and

causing the head portion to compress the compressible member of the heat sink attachment mechanism and expand an outer diameter of the compressible member.

24. The method of claim 23 comprising coupling a second shaft portion of the fastener to a circuit board support mount, the shaft portion defining a first shaft potion having a first diameter and a second shaft portion having a second diameter less than the first diameter of the first shaft portion, an interface between the first shaft potion and the second shaft defining the flange.

25. The method of claim 23 comprising inserting the compressible member within a trough portion defined by the shaft portion of the fastener, the trough portion extending along the shaft portion about, and substantially perpendicular to, the long axis of the shaft portion, to secure the compressible member to the fastener.

26. A heat sink attachment mechanism comprising:

a fastener having a head portion, an intermediate portion, and a securing portion, the head portion configured to generate a stress on a heat sink to secure the heat sink with a circuit board component, the intermediate portion having a flange substantially perpendicular to a long axis defined by the shaft portion, the flange configured to abut a surface of a circuit board carrying the circuit board component, and the securing portion configured to secure the circuit board to a support mount when the fastener secures the heat sink to the circuit board component; and

a compliant o-ring in communication with the shaft portion of the fastener and configured to orient between the head portion and the heat sink, the compliant o-ring having a diameter configured to expand when the head portion compresses the compressible member and generates the stress on the heat sink when the fastener secures the heat sink to the circuit board component.